

REMARKS

This Reply is responsive to the Office Action mailed March 18, 2009 ("Office Action"). At the time of the Office Action, Claims 1-6 were pending in the application. Of these, Claims 3-6 were withdrawn in response to the Restriction Requirement mailed February 12, 2009. This Reply is being filed with a 1 month extension of time. No further fees are believed to be due, however the Examiner is expressly authorized to charge any fees necessary to Deposit Account No. 04-0100 to maintain the pendency of this application.

I. Amendments to the Claims

In this Reply, Claim 1 has been amended to include the limitation:

wherein the throw-away tip is mounted on each of the first and the second tip mounting seat such that one of the long side faces provides rake faces in a cutter rotation direction.

Support for this amendment is found throughout the Specification. (See, e.g., FIG. 1, FIG. 2, and corresponding text of Substitute Specification showing offset of long side surfaces 22 (i.e. leg side faces of trapezoid) from axial and radial axes of cutter body to provide rake faces during operation of cutter body.) Claim 2 has been amended to recite:

Claim 2 (Currently Amended): A throw-away tip, which is mounted on the pin mirror cutter of Claim 1, comprising:

cutting edges formed at intersecting ridgeline parts between a pair of oppositely disposed long side faces of a substantially trapezoidal flat-plate-shaped tip body, and upper and lower faces of the tip body, the cutting edges providing pin

mirror cutting edges for inner and end faces of an annular cutter body of the pin mirror cutter.

Support for this amendment is also found throughout the Specification. (See, e.g., page 13, lines 4-9, and page 18, lines 5-10, of Substitute Specification.)

II. Rejections under 35. U.S.C. 103

In the Office Action, Claims 1 and 2 were rejected under 35 U.S.C. 103(a) as being unpatenable over U.S. Patent No. 5,919,008 to Shimomura (“Shimomura”) in view of Japanese Patent Publication No. 2001-212712 to Nakasaki et al. (“Nakasaki”). In view of Claims 1 and 2, as amended, Applicants respectfully submit that these rejections are now moot.

With respect to amended Claim 1, Applicants respectfully submit that Shimomura and Nakasaki, alone or in combination, fail to disclose or suggest a pin mirror cutter in which a throw-away tip is mounted on first and second seats such that a thickness direction of the tip body is approximately aligned with the radial and axial directions of the cutter body, respectively, and such the rake faces in the cutter rotation direction for the throw-away tip in the first and second mounting seats are provided by a leg side face.

According to the Office Action, Shimomura discloses all the limitations of previously submitted Claim 1, except for the substantially trapezoidal flat-plate-shaped tip body. It is asserted in the Office Action, that such a tip body is disclosed in Nakasaki. However, although trapezoid-shaped tip bodies appear to be disclosed by Nakasaki, Nakasaki only appears to disclose how to mount or arrange tips in mounting seats with a thickness direction that is approximately aligned with a radial direction of a cutting tool. This is clearly illustrated in FIGs. 8 and 9 of Nakasaki

(portions reproduced below).

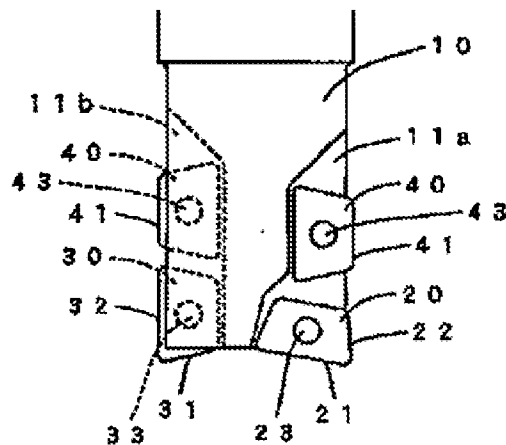


FIG. 8

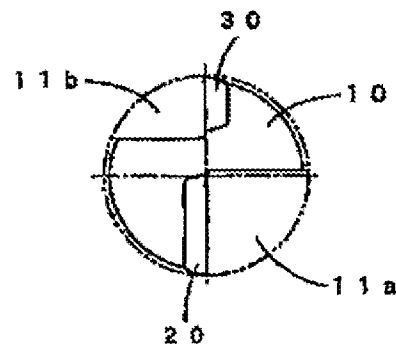


FIG. 9

As can be seen in the figures above, Nakasaki discloses mill 10, having tips 20, 30, 40 and 40 mounted thereon. The tips extend along the longitudinal axis (i.e., axial direction) of mill 10. As such, these tips always have a thickness direction that is always perpendicular to the axial direction of mill 10.

Nakasaka does not disclose any embodiment where a tip is mounted on mill 10 with a thickness direction that is approximately aligned with the axial direction of mill 10. Accordingly, while Nakasaki may disclose use of trapezoidal-shaped tips, Nakasaki fails to disclose or suggest how a tip mounted with a thickness direction approximately aligned with an axial direction of a cutting tool would be arranged such that the tips in the first and second mounting seats both have rake faces provided by a long side face (i.e. leg side face) of the tip body. In contrast, amended Claim 1 explicitly recites that the throw-away tip is mounted on the first and the second tip mounting seats such that leg side faces provide the rake faces in a cutter rotation direction.

Accordingly, in view of the arguments presented above, Applicants respectfully submit that Claim 1, as amended, is patentable over the asserted combination of Shimomura and Nakasaki. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 1.

With respect to Claim 2, the combination of Shimomura and Nakasaki fails to disclose a throw-away tip mounted in the pin mirror cutter of Claim 1, where the cutting edges formed at intersecting ridgeline parts between oppositely disposed long side faces of a trapezoidal tip body and upper and lower faces providing the pin mirror cutting edges for the inner and end faces of an annular cutter body. Although Shimomura appears to disclose tip bodies for a pin mirror cutter with inner and end faces and Nakasaki discloses using trapezoidal-shaped tips, Nakasaki fails to disclose how such tips would be arranged on inner and end faces. FIG. 8 (shown above) shows possible arrangements for tips 20, 30, and 40 for mill 10. In FIG. 8, these tips are mounted on the shaft of mill 10. No tips are mounted on an end of mill 10. In FIG. 8, Nakasaki shows the cutting edges of tip 20 being formed by a leg (long) side edge 22.

In view of the teachings of Nakasaki, Applicants respectfully submit that Nakasaki teaches, at the most, how trapezoidal tips might be arranged on a shaft or other circumferential surface of a cylindrical or circular cutting body, such as an inner or outer surface of an annular cutting body. However, Nakasaki fails to disclose how trapezoidal tips would be arranged on an end face of a cylindrical or circular cutting body to work cooperatively with tips on an inner or outer face of such a cutting body. Accordingly, Applicants respectfully submit that Nakasaki fails to disclose how to arrange the tips in Shimomura on an annular cutting body so that the cutting edges, formed by ridgelines of the long side faces and upper and lower faces, provide pin mirror cutting edges for both inner and end faces of the annular cutter body.

Accordingly, in view of the arguments presented above, Applicants respectfully submit that Claim 2, as amended, is patentable over the asserted combination of Shimomura and Nakasaki. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 2.

CONCLUSION

It is respectfully submitted that each of the presently pending claims (Claims 1 and 2) is now in condition for allowance and notification to that effect is requested. Examiner is invited to contact the Applicants' representative at the below-listed telephone number if it is believed that the prosecution of this application may be assisted thereby. Although only certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentable. Applicant reserves the right to raise these arguments in the future.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Dated: June 26, 2009

Respectfully submitted,

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